



**Noise Summary Report**  
**Third Quarter 2023**



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## 1. Summary

Compliance against the consented noise limit(s) and New Zealand Standards was achieved during the third quarter of 2023. Five mean corrected noise level (MCNL) assessments were made during the period; all of which were compliant. None of the MCNLs achieved all three readings in suitable meteorological conditions.

16 single corrected measurement levels (SCML) were made during the quarter; four were taken in suitable met conditions. Suitable wind conditions (<3 m/s), as recorded at the Kenny St meteorological station, occurred on 12 of the 21 monitoring occasions. Day-time measurements returned levels ranging from 38.4 to 45.7 dB  $L_{Aeq}$ ; the dominating noise was birds. MCNLs from these readings returned 40.0 to 44.5 dB. Night-time measurements recorded levels between 24.1 and 28.8 dB; the dominant noises were road traffic and trucks dumping. These readings returned a MCNL of 26.0 dB.

Five noise checks (not SCML) were completed for various mining related activities. One reading was made of a drilling rig installing a piezometer alongside the rugby clubrooms. Strong winds and traffic prevented obtaining a compliance reading, but observations indicated a compliant level of 68 dB for the construction activity. One close-proximity reading was made of the rock breaker operating at the mill; observations indicated a noise level of 73 dB, however strong winds prevented a compliance reading. A listen-only check was completed on a small excavator operating at the base of the pit, which was inaudible from the pit rim. Two close-proximity checks were completed to assess the viability of in-pit waste rock dumping from Underground; levels ranged from 46.9 to 48.0 dB with trucks and a bogger the dominant noises.

There were four noise complaints raised during the reporting period; two related to helicopter flights to Wharekirauponga, and two that were found to be unrelated to mining activities. On 23 August 2023 (when both complaints related to helicopter activity were received), there was an increase in helicopter flights due to having to transport more than usual staff and contractors to the Wharekirauponga site for exploration works. Another complaint related to helicopter activity was received in September but after investigation it was found that the helicopter was not related to mining or exploration activities as there were no flights in that area on the date specified by the resident, and the description of the helicopter did not match the one used by OceanaGold. Also in September, a complaint was received regarding a banging noise at night. A staff member was sent to investigate, and it was found that no mining activities were occurring near the residency.

## 2. Introduction

This report provides a summary of noise measurements and assessments undertaken by OceanaGold (NZ) Ltd Waihi Operations (OceanaGold) for the third quarter of 2023. The report is prepared to comply with the requirements of four consents:

- Hauraki District Council (HDC) Land Use Consent (LUC) for Project Martha (LUC 202.2018.857.1, condition 26A). OceanaGold is required to submit quarterly summary reports to Council on representative noise levels.
- Under the Noise Conditions of the LUC for the Favona Underground Mine (No. 85.050.326.E, condition 9) a summary report is required at the end of each 3-month period from commencement to completion of work.
- Under the Noise Conditions of the LUC for the Trio Underground Mine (RC-15774, condition 6d) a summary report is required at the end of each 3-month period from commencement to completion of work.
- Under the Noise Conditions of the LUC for the Correnso Underground Mine (RC-202.2012, condition 11d) a summary report is required at the end of each 3-month period from commencement to completion of work.

Although a report is required, there was no active mining in the areas of the later three consents during the period.

For exploration drilling operations, the conditions set out in section 8.3.1 of the Hauraki District Plan apply. Any monitoring of these activities is also included in this report.

### 3. Methodology

Sound measurements and assessments by OceanaGold comply with the consent conditions and the New Zealand Standards *NZS 6801:2008 Acoustics - Measurement of Environmental Sound* and *6802:2008 Acoustics - Environmental Noise*.

Compliance noise is measured for a minimum of 15 minutes as required under the consent conditions. Compliance readings cannot always be made on every site visit or check due to excessive wind conditions (i.e. greater than 5 m/s).

Monitoring checks are made in response to complaints whenever necessary; initially to verify the noise level and subsequently (if necessary) to determine the effectiveness of any mitigating actions and/or the effect of changing wind conditions (changing wind strength or direction influences noise transmission between the mine and the receiver).

OceanaGold uses noise monitoring procedures to ensure conformance to the above standards and consent conditions, and to support noise mitigation protocols documented in the site Noise Management Plan. The noise mitigation protocols require review of wind conditions that could potentially result in noise levels generating complaints. Monitoring has shown that wind speeds over 3 m/s (as measured at the OceanaGold meteorological station at Kenny St) are likely to increase mine noise downwind of an activity to levels that generate complaints. When such wind conditions occur, OceanaGold implements mitigating actions to reduce noise levels where practicable. During periods when high frequency sounds such as birds, cicadas and crickets become the controlling noise, a filter can be applied to noise measurements to exclude four and eight kHz (kilo-hertz) and enable analysis of the lower frequency noise levels (i.e. those usually associated with mine operations).

Wind has a significant influence on sound propagation. Sound measurement and assessment must take the effect of wind into account. Sound measurements are taken in conditions ranging from nil wind up to 5 m/s at the receiver (*NZS 6801:2008 Acoustics - Measurement of Environmental Sound*). Wind greater than 5 m/s is generally unacceptable for monitoring due to wind noise effects in the nearby environment (e.g. trees) and on the microphone.

Downwind, wind speeds of 3 - 5 m/s are considered marginal due to propagation of sound by wind from source to receiver. Conditions like those for which the compliance limits are set generally occur when wind speeds are less than 3 m/s (*Hegley, 2003: Evidence of Nevil Hegley – Favona Underground Project 2003 Final – 11/11/03*).

Wind speeds are recorded at the OceanaGold met station. These wind readings are assumed to represent the general wind conditions across Waihi and at the noise source (e.g. the mine).

Other meteorological factors influencing the overall sound environment include solar radiation, cloud cover, sunrise and sunset times, wind direction and the direction from source to receiver. These factors were also measured to derive a meteorological stability rating at the time of monitoring. Meteorological stability categories of 4 (neutral) or 5 (slightly positive) are considered suitable meteorological influences on sound propagation and are used to determine noise compliance (*NZS 6801:2008 Acoustics - Measurement of Environmental Sound* (HDC LUC 97/98-105, Condition 3.8 (e))).

## 4. Results

### 4.1. General

Monitoring activity for the period is shown in Table 1.

**Table 1.** Noise monitoring activity.

	Number of days checked	Number of days measured	Number of checks (compliance & other)	Number of complaint days	Number of complaint checks
<b>July</b>	4	3	14	0	0
<b>August</b>	2	2	7	0	0
<b>September</b>	0	0	0	0	0
<b>QR Total</b>	<b>6</b>	<b>5</b>	<b>21</b>	<b>0</b>	<b>0</b>

### 4.2. Wind

Adverse wind conditions ( $\geq 3$  m/s, as measured at the met station) occurred on four (4/16) of the compliance monitoring occasions (see Table 2). While it is the general prevailing wind condition as measured at the met station that primarily affects noise propagation, measurements may be made under adverse conditions if the wind at the receiver or at street level is generally more favourable for monitoring. Even then, representative noise measurements of mining activities are not always possible due to wind noise. Periods of high wind strengths above 5 m/s were experienced three times this period, during noise checks (not on compliance monitoring occasions).

**Table 2.** Percentage of monitoring occasions average wind speeds  $\geq 3$  m/s.

	Receiver	Met Station
<b>July</b>	0%	9%
<b>August</b>	0%	60%
<b>September</b>	0%	0%
<b>QR Total</b>	<b>0%</b>	<b>25%</b>

75% (12/16) of the compliance measurements made in the reporting period were in suitable wind conditions ( $< 3$  m/s at the met station). Adverse wind conditions can influence suitable met assessments, as well as other factors including wind direction, solar radiation, and cloud cover. Monitoring in suitable wind conditions occurred more often during this reporting period compared to the previous (58%).

### 4.3. Compliance

No mine dominated SCML exceeded compliance levels in suitable met conditions during the reporting period (see Table 3).

**Table 3.** Summary of Single Corrected Measured Levels (SCML).

	Total SCML readings	Mine dominated SCML over (limit + 5 dB)	SCML in suitable met	Mine dominated SCML over in suitable met
<b>July</b>	11	0	1	0
<b>August</b>	5	0	3	0
<b>September</b>	0	0	0	0
<b>QR Total</b>	<b>16</b>	<b>0</b>	<b>4</b>	<b>0</b>

Five MCNL assessments were made during the quarter. None of these had all contributing measurements in suitable met conditions (see Table 4) but were within consent limits.

**Table 4.** Summary of Mean Corrected Noise Levels (MCNL).

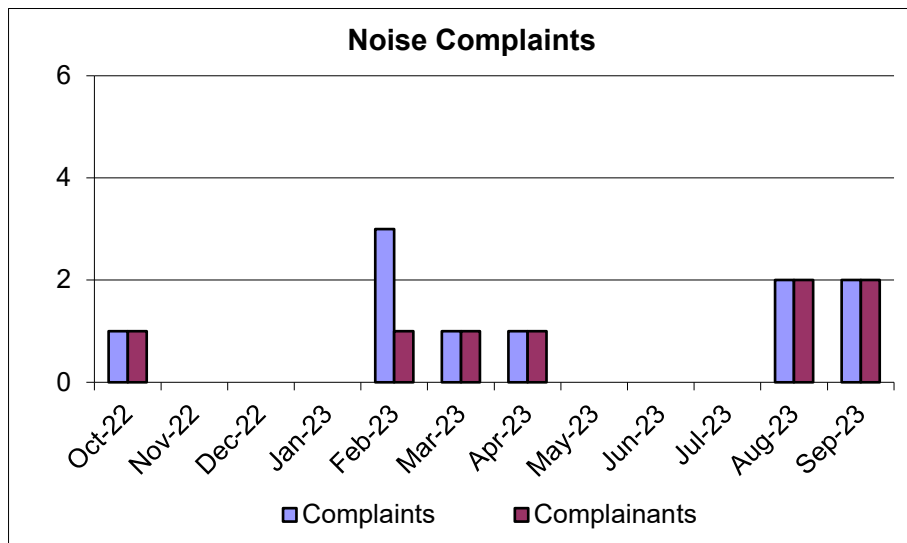
	Total MCNL calculations	Marginal MCNL	MCNL 5 dB over limit	MCNL in suitable met	MCNL over limit in suitable met
<b>July</b>	3	0	0	0	0
<b>August</b>	2	0	0	0	0
<b>September</b>	0	0	0	0	0
<b>QR Total</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

#### 4.4. Complaints

There were four noise complaints (Figure 1) raised during the reporting period, two related to helicopter flights to Wharekirauponga, and two that were found to be unrelated to mining activities.

On 23 August 2023, two complaints were received relating to helicopter activity. On this day, there was an increase in helicopter flights due to having to transport more than usual staff and contractors to the Wharekirauponga site for exploration works.

In September, another complaint related to helicopter activity was received. After investigation, it was found that the helicopter was not related to mining or exploration activities as there were no flights in that area on the date specified by the resident, and the description of the helicopter did not match the one used by OceanaGold. In the same month, a complaint was also received regarding a banging noise at night. A staff member was sent to investigate, and it was found that no mining activities were occurring near the residence.



**Figure 1.** Noise complaint history.

## 4.5. Operations Assessment

### 4.5.1. Mill/Processing

Processing operations continued as usual during the quarter. Day-time activities at the mill were compliant with noise limits and the six measured levels ranged between 38.4 and 41.5 dB, with birds being the dominant noise. The MCNLs from these readings returned 40.0 and 40.9 dB. Night-time activities at the mill were also compliant with noise limits and the four measured levels ranged between 24.1 and 28.8 dB (MCNL 26.0 dB), with traffic and trucks being the dominant noises.

In July, one noise check was completed for the rock breaker operating at the mill. Close proximity observations indicated a noise level of 73.4 dB, however strong winds prevented a compliance reading. Extrapolation of this data indicates that the rock breaker would be compliant at nearby residences.

### 4.5.2. Underground Operations

In mid-July, a small excavator was operating at the base of the pit to prepare the site for in-pit dumping from Underground. A listen-only check was completed; the excavator was inaudible from the pit rim.

Day-time, in-pit waste rock dumping from Underground commenced on 9 August 2023. Five noise checks were completed (two in closer-proximity, three from a compliance location), with levels ranging from 43.4 to 48.0 dB (MCNL 44.5 dB). The trucks and wind were the dominant noises for the two close-proximity non-compliance readings, while the dominant noises for the three compliance readings were birds, wind, and traffic. No night-time waste rock dumping was carried out during the quarter.

Including the usual quarterly monitoring requirements, six compliance measurements were made of surface-related activities (e.g. stockpiling and ventilation) supporting underground operations during the period. Day-time activities were compliant with noise limits and levels ranged from 39.1 to 45.7 dB, with birds being the dominant noise. MCNLs from these readings ranged from 40.0 to 44.5 dB.

### 4.5.3. Exploration & Other Drilling

Exploration drilling during the quarter continued underground; no local surface exploration drilling occurred.

One noise check was completed in July for the drilling rig installing a piezometer alongside the rugby clubrooms. Wind conditions were excessive (>5m/s) and highway traffic frequency in that area prevented obtaining a compliance reading, but observations indicated a compliant level of 68 dB for a construction-related activity.

### 4.5.4. Martha Pit (non-Underground related)

No significant, non-Underground related, works were conducted in the Martha Pit during the quarter, with only essential maintenance (drainage, weed control, and security) and low-impact geotechnical monitoring being undertaken.

## 5. Mitigation

### 5.1. Mine & Exploration

Commitment to the management and mitigation of mine noise was sustained during the reporting period. In accordance with the Noise Management Plan (noise mitigation), no yellow or red assessments were determined during the quarter.